On the Petrified Forest of Radoweñz near Adersbach, and upon the Process of Petrifaction. By Professor Göppert.

In the vicinity of the district of Adersbach, so remarkable for its wonderfully shaped sandstone formations, there is yet another natural curiosity, which, although less striking to the eye, merits no less consideration in a scientific point of view, namely *a magnificent deposit of petrified trees, such as has never yet been observed, at least in the coal-measures*, either in Europe or in any other part of the earth.* From Rohnow, a small town in Bohemia, on the western boundary of the county of Glatz, four and a half English miles from Cudowa, an elevated ridge, consisting of carbonaceous sandstone, striking in a westerly direction as far as Slatina, rises above the villages of Wüstkosteletz, Mystrey, Gipka, and Kliwitz; it is regarded as the overlying sandstone of the subjacent carboniferous rocks, and rises to its greatest elevation at the Oberberg of Slatina, a point affording a beautiful panoramic view. In this chain of hills, eleven miles and a half in length, and on an average two miles and a quarter in breadth, which is, for the most part, covered with forest, numerous petrified trunks occur, partly on the high ridges, partly in and on the numerous springs and rivulets which issue from these, and also on the borders of woods, roads, and fields, but especially in the environs of Radowenz, a village situated about two leagues from Adersbach, and united with the latter point by a pretty good road; also near the Bränden, and on the Oberberg of Slatina, where there are points from which at least 20,000 to 30,000 hundredweights of petrified wood may be surveyed at one glance, and whence all the museums of the world might be furnished with splendid specimens, such as they hardly possess at present. M. Benedict Schroll, a merchant and manufacturer in the neighbouring town of Braunau, who is engaged in the careful study of the very interesting palæontological conditions of the surrounding district, and has furnished me with much new information, especially with regard to the Permian formation, first informed me of this phænomenon, which I visited twice in the course of last summer in company with him and Drs. Beinert and Gebauer, but without exhausting it, as petrified trunks are not wanting in the district of Schadowitz lying to the south. The trunks themselves, which are almost always deprived of their bark, are from one to four feet in thickness, and from two to six feet long; round or roundish oval, often in longitudinal fragments as if split in two; all the specimens having horizontal, nearly even-fractured surfaces, but always with sharp angles, without traces of having been rolled about; of the brownish-grey colour of chalcedony, and a texture like hornstone; sometimes hollow in the middle, like trees of our present world, of which the summits have withered; also spirally twisted at an angle of three to

[* The tree-bearing sandstone described in this paper has been regarded by some geologists as being more probably a member of the Permian than of the Carboniferous series, and to be the representative of the tree-bearing Roth-liegendes of Chemnitz and Kyfhaüser.—Ed.]

four degrees, and often furnished with large cicatrices of branches; they are consequently only fragments, scattered about in those localities during the cultivation of the forests and fields, of stems which very probably occur in the interior of the sandstone rock, from which they only project singly. Smaller stems or branches, of less than one foot in thickness, are wanting; and it is remarkable that I have never found any such in the carboniferous formation, whilst in the petrified forests of the tertiary formation, for example, in Egypt and Java, these are even more abundant than the larger ones. They all belong to coniferous plants, similar to the *Araucariæ*; one of them decidedly is a new species, *Araucarites Schrollianus* (named in honour of M. B. Schroll), and the other is *A. Brandlingii*, which has been found in the carboniferous strata of England*, Saarbrücken, Bohemia, and Silesia. I obtained a specimen of the former species, six feet in length and three feet in thickness, from M. Schroll; it is now an ornament of the Palæontological portion of the Botanic Garden at Breslau.

As regards the process of petrifaction itself, the previous experiments and observations mentioned by the author in the years 1836 and 1837, at the meetings of German Naturalists at Jena and Prague, and in the 'Fossil Flora of Silesia,' published in 1844, were, at the reading of this paper before the Silesian Society, Nov. 27, 1857, brought together with his more recent ones, and illustrated by the exhibition of specimens. The former started from woods discovered in the existing world, petrified by carbonate of lime or oxide of iron, to which native copper has very recently been added as a petrifying medium, as this has filled up cells and vessels in a fragment of beech-wood communicated to me by my honoured friend Haidinger. The examination of fossil woods shows, that after they are filled up by the various petrifactive media (carbonate of lime, silica, the various forms of oxides of iron and copper, cinnabar, baryta, gypsum, lead-glance and clay), in by far the greater number of cases, notwithstanding the solid, perfectly mineralized appearance of the exterior, a larger or smaller quantity of cells and vessels are still present, which, probably in consequence of the long duration of the process, have become changed into brown-coal, although retaining the cellulose here and there; hence the prevailing brown colour of petrified woods, which, however, are still frequently tinged in various ways by oxide of iron. Other differences, which can only be hinted at here, may be explained by the state in which they were at the time of fossilization. We need only refer to the infinitely variable texture of the woody plants of an existing forest. A complete displacement of the organic parts very rarely takes place, as perhaps in the so-called pyritized woods, and woods mineralized by brown iron-stone, as also in the crystalline wood-opals of Hungary, Bohemia, the Rhine districts, &c., and there in consequence of a process of decomposition of the organic matter. In the latter, cells still occupied by air-bubbles are often found.

In conclusion, the process of solution of the petrifactive minerals

[* *Dadoxylon Brandlingi* of Morris's 'Catalogue of British Fossils.'—Ed.]

was taken into consideration, and a great dilution of the solutions assumed, because otherwise the petrifaction would be prevented and incrustations produced; and at the same time reference was made to the remarkable and hardly explicable phænomenon, that with all the similarity of the processes of a former world with those of the present one, and notwithstanding the petrifactions by lime and oxide of iron now observed, still no siliceous petrifactions have been discovered, although in living plants, or at least in particular parts of them, silicifications take place in a comparatively very short time, and indeed in the same way as formerly in fossil woods, as in the epidermis of the stem of the Equiseta, in the Bamboos, the seeds of many Grasses, and above all, in the exceedingly remarkable tree called *El Cauto*, discovered by Krüger in Trinidad, in which, after the cells are filled, even the organic walls at last disappear, and become replaced by silica. All this, and many other circumstances are in favour of the former existence of conditions which have hitherto escaped our observation.—*Abstract of a memoir read before the Silesian Society*, Nov. 27, 1857.

Structure and Development of the Flower and Fruit of the Pear. By J. Decaisne.

From a communication made to that active association, the Botanical Society of France, we learn that Decaisne has proved, by direct observation of the development, the correctness of that view respecting the structure of the pomaceous fruit which we have always maintained on general morphological grounds. The pips are the true pistils; they are separate and free at their first appearance; a little later, a growth from the receptacle forms an open cup around them, ends by completely investing them, and becomes the flesh of the core. In the Pear, as the base of the at first sessile flower-bud elongates into a peduncle, the upper part of this thickens with the bud itself, and forms the tapering lower part of the Pear, which therefore below the carpels is formed of the stalk, as absolutely as in *Anacardium* or *Hovenia*. From these observations, and others upon *Melastomaceæ*, &c., Decaisne concludes that the orthodox view of the structure of the flower, "as explained by our illustrious masters, R. Brown, De Candolle, and Jussieu," is demonstrably correct; that "it is not necessary to call into account that axis which is at the present day so often and so willingly appealed to for explaining the structure of flowers and fruits;" that "it is not impossible to bring under the common law of organization the ovaries with a free central placenta, whose differences from ordinary ovaries are more apparent than real;" and that most probably placentation always, in spite of appearances, belongs to the ovarian leaves. We are pleased to find that the experience of this eminent botanist has brought him into agreement, as regards the conception of species, with the views of those whom we must regard as the soundest workers and writers of the present day, and those on whom the hopes of the science rest. He states that if he had the *Plan-*